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AUTHOR	Hagedorn, Linda Serra; Moon, Hye Sun; Cypers, Scott; Maxwell, William E.; Lester, Jaime
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ABSTRACT

This document discusses the American sport baseball as a metaphor to help describe a way to measure, comprehend and visualize student progression through the American community college. This analysis is based on data from the Transfer and Retention of Urban Community College Students (TRUCCS) study. TRUCCS is a longitudinal study of 5,000 community college students from the nine campuses of the Los Angeles Community College District. The study used a 47-item questionnaire on the community college experience. The questionnaire was administered during the Spring 2001 semester to 5,000 students across 241 classrooms. Complete transcripts were also collected as part of the study. Of the total TRUCCS sample, 66% (n=3,318) indicated an intention to transfer. Results indicated that only about half of the students had made any progress towards transferring. Discusses some possible reasons for students not progressing in their transfer efforts. The study finds that it typically takes 9.5 semesters for students to become transfer ready, thus providing evidence against the notion of a "two year" college. It analyzes differences in groups based on gender, ethnicity, age, and native language. Appendix A contains a list of the kinds classes that fulfill the partial completion of transfer requirements as specified by the Intersegmental General Education Transfer Curriculum (IGETC) in California. (Contains 6 tables and 15 references.) (JS)

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Transfer Between Community Colleges and Four-Year Colleges: The All American Game

Linda Serra Hagedorn
Hye Sun Moon
Scott Cypers
William E. Maxwell
Jaime Lester

University of Southern California
Rossier School of Education
3470 Trousdale Pkwy.
Suite 500
Los Angeles, CA 90089-0031

213-740-6772

Lsh@usc.edu

TC 030642

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Transfer between Community Colleges and Four-Year Colleges: The All American Game

It would be difficult to find anyone who would disagree that community college transfer rates are lower than optimal. Despite the widespread acknowledgement of a problem and the myriad of solutions suggested in both research articles and in single-institution efforts, the problem has not abated. As more and more students elect to attend the country's network of "two-year" institutions, the importance of assisting students to succeed on the path that leads through the community college to bachelor degree attainment is more pronounced. Students of color and those from low-income backgrounds are disproportionately impacted by the sluggish nature of transfer because the majority of these students who go to college will begin their postsecondary education in community colleges (Rendon & Valadez, 1993; Nora & Rendon, 1990).

In this article, we introduce a novel way to view and measure community college student progress for those whose stated goal is transfer and ultimately bachelor degree attainment. Using the metaphor of the game of baseball, we explain how the "all American game" provides a clear and innovative way to measure, comprehend, and visualize student progression in the uniquely American invention of the community college. The comparison to the game of baseball is in no way meant to trivialize student progress through the community college. On the contrary, the metaphor is an attempt to explain a very complex situation and provide a useful heuristic to assist the development of policy that will increase student progress toward successful completion of the community college requirements toward transfer.

The proposed framework of "the Transfer Game" is an outgrowth of the Transfer and Retention of Urban Community College Students (TRUCCS) Project. TRUCCS is a longitudinal study of 5,000 community college students from the nine campuses of the Los

Angeles Community College District. TRUCCS has been funded by the Field Initiated Studies Program of the U.S. Department of Education, Office of Institutional Research and Improvement, and the Lumina Foundation. The study is charged with the investigation of the factors (both organizational and individual) that promote retention and persistence of urban community college students. In addition, the project addresses issues of remediation, patterns of reverse transfer, social integration, and course taking patterns. The diversity of the Los Angeles Community College District will allow multiple comparisons by different groups of students (ethnic, age, gender, SES, etc.). The project began with the development of a new 47-item questionnaire to reflect the community college experience that was administered during the Spring 2001 semester to 5,000 students across 241 classrooms. In addition to the questionnaire data, the project also collected complete transcript data of all students. These analyses are based on questionnaire data collected during Spring 2001 and transcript data from the first semester that each student attended the LACCD through the Fall of 2002.

Early in the project it became clear that student transcripts were our richest source of knowledge. The combination of BOTH student responses (questionnaires) and actual behaviors (transcripts) provide TRUCCS a clear and open view of student outcomes. Thus, just as binoculars enhances the view for the of the baseball diamond, the dual lenses of transcript and questionnaire data are the binoculars of the TRUCCS Project.

Prior to explaining the rules of the Transfer Game, an understanding of the object of the competition needs to be attained. In baseball, the object of the game is to score a run by progressing through a series of bases. Although baseball is a team sport, individual players compete for a high batting average, runs, and other individual achievements. Individual statistics are collected and displayed on baseball cards and other materials that provide the value of

individual players. These individual statistics create the value of the player and thus provide a means of calculating individual value that is highly important when other teams contemplate recruiting the player. The object of the Transfer Game is for students to become transfer ready by successfully progressing through modules of predetermined transfer level courses. The courses leading to transfer readiness have been translated into "bases" to measure progress toward the goal. Students who score and who have proven themselves worthy players are more likely recruits to four-year institutions (or to extend the metaphor; recruitment to the major league).

However, in the game of baseball there is also a team component to judge success. In our baseball metaphor, the teams are the campuses which keep the aggregate score. In the Transfer Game, the college scores by declaring a student transfer ready. It is important to note that the college does not need to wait until actual transfer to record the score. This distinction is significant and realistic as it is unfair to measure a college's accomplishment by the number of students who actually transfer—an event that may occur distant from the community college's influence. Actual transfer is amorphous and can occur at anytime in a student's lifetime. Thus, to discount a student because he or she has not transferred in a semester, a year, or even 3 years after leaving a community college is frequently inaccurate for a good number of students. Second, transfer is at the discretion of the student, not the institution. The old adage of "you can lead a horse to water but you cannot make it drink" seems especially appropriate. Under the best of intentions, transfer is difficult. Family, job, health, and a host of other issues unrelated to the college frequently prevent students from transfer. Holding a community college responsible for the actual successful transfer of its *former* students is akin to holding parents of adult children responsible for the actions and behaviors of their grown offspring. Thus, rather than use transfer

as the goal, in the *Transfer Game*, institutions keep score of the proportion of students who are prepared to transfer and have become equipped with the necessary credentials such that transfer is a viable option that can occur at any time. Continuing the metaphor, in the Transfer Game, it is suggested that community colleges keep score of the number or proportion of RBI's, or the number of students transfer ***R***eadied ***B***y the ***I***nstitution.

With the object of the game explained, let us move onto the rules and particulars. In baseball, a player comes to bat and swings at a pitched ball. If the ball is successfully hit, the player then proceeds through the bases in an orderly progression. In college, the players are students who come to bat by enrolling in courses. Students attempt to successfully connect with the knowledge "pitched" from instructors and thus pass the course. Successful swings or passes of the course allows the student to proceed along the transfer path. Just as the baseball diamond consists of a first, second, and third base, so too do the stops along the transfer path.

Because TRUCCS is a study of the Los Angeles Community College District, we defined our transfer diamond using the transfer framework established for the state of California. While other states or districts may choose to alter these "bases", the example of TRUCCS provides a general framework and conceptual basis for transfer readiness.

Intersegmental General Education Transfer Curriculum (IGETC)

In 1988, California passed assembly Bill 1725 that promoted governing boards and academic senates from the California public postsecondary segments (University of California, California State University, and the Community Colleges) to mutually "develop, maintain, and disseminate a common core curriculum in general education for the purpose of transfer" (Board of Governors, California Community Colleges, 1991; p. 2). The result was a statewide agreement for articulation between the California Community Colleges and the public four-year

universities. Titled the Intersegmental General Education Transfer Curriculum, or IGETC, (pronounced "eye- get-see"), the state has identified six to seven distinct areas, each consisting of modules of several courses that when passed with a grade of "C" or better, generally satisfy the lower division education requirements of the public university system.[1]

While completion of the IGETC does not guarantee admission to the universities, it does provide a framework of transfer level courses that provide credit at the public institutions and releases students from taking additional lower-division or general education courses at the four-year university. On the other hand, for students intending to transfer into programs such as engineering that require many prerequisites, careful planning beyond IGETC is recommended.

Research on Transfer

Defining transfer is a complicated issue. Studies, institutions, and researchers have different definitions and metrics for transfer thus providing mixed and contradictory results (Hirose, 1994). Historically research on community college transfer has used a dichotomous variable to measure transfer, because actual transfer either occurs (coded as 1) or it does not (coded as 0). Thus, transfer has been defined as a discrete outcome rather than a continuous behavior ignoring the genuine actions of students who are on the transfer path but who do not complete the process. Yet another wrinkle to historic definitions and measures is the assumption that transfer is orderly and linear; community college → university. In many cases, transfer is convoluted, zig-zag, or flows in the opposite direction. Townsend (2002) found that many students participate in "reverse" transfer moving from a four-year university to a community college. Hagedorn and Castro (1999) pointed out other types of community college enrollment, such as high school dual enrollment and university students who attend community colleges only

[1] There are six modules for transfer to the California State University System (CSU), but seven for the University of California System (UC). The seventh module required for the UC system is *Language Other Than English* (equivalent to two years of high school foreign language).

during the summer semester. These forms of nontraditional enrollment have further threatened the integrity of transfer measures. The TRUCCS data show that traditional linear transfer (high school → community college → university) is actually rare among urban students and is thus the exception rather than the rule. Using a weighting algorithm to correct for a slight bias by gender and age, among the TRUCC sample, less than one-fifth of the sample directly entered the community colleges following high school graduation.

Transfer Rate

The transfer rate is commonly calculated as the ratio of those students who transfer over the potential number of transfer students (Banks 1990). Difficulties and inconsistencies arise when attempting to define which students qualify as truly potential transfers. Banks (1990) used a analysis of credits to construct a more accurate transfer ratio. Students were considered potential transfers based on the number of transferable course credits completed. Other studies have identified the differences in transfer ratios when applying different definitions. The National Center for Education Statistics (NCES) utilized the Beginning Postsecondary Student Longitudinal Study to illustrate the complexity of the transfer definition. Using methods based on Spicer and Armstrong (1996), the report illustrates various formulas that employ a constant numerator but diverse restrictive denominators, prior to narrowly defining transfer as "initial enrollment at a community college followed by subsequent enrollment at any 4-year institution within the 5-year study period" (p. vi). Most transfer rate formulas seek to eliminate those students who may aspire to transfer but will likely not be able to do so. Thus, we posit that the restrictive nature of the definitions and the use of a strict dichotomous gauge serve to obfuscate the reality that many students aspire to transfer and will make some progress toward the goal.

We further argue that education provides benefits even when it does not result in transfer. Simply put, some community college coursework is better than none while more is better.

Methodology

Transcripts of all students who indicated an intention to transfer (66% of the total TRUCCS sample; n=3,318) were coded in accordance with the IGETC Curriculum requirements. In other words, courses or groups of courses fulfilling the specific modules were isolated and tagged such that a grade of "C" or better would indicate completion of the requirement. Using the baseball paradigm, students advanced one base by completing the following in any order: 1) IGETC English requirement, 2) IGETC Mathematical Concepts requirement, 3) completing any two of the remaining four modules[2], and 4) completing the last two modules. We labeled students who had not completed any of the modules as "on the deck." Appendix A contains a list of the kinds of courses triggering module completion. In some cases the courses were proscribed, in others the students choose from a list of courses fulfilling the requirement. All data was coded in accordance with all possible permutations of courses fulfilling the IGETC requirement at the specific campus. After tabulating the results, we analyzed transfer readiness in accordance with our research questions;

1. Which bases are students reaching and which seem to be most difficult and distant?
2. Is there a relationship between gender, age, ethnicity, native language or other demographic and progress along the transfer baseline?
3. What separates those students who have scored a run from those who are struggling to advance?

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[2] The four modules are:

- Physical and biological sciences;
- History, constitution, and American ideals
- Arts and Humanities
- Social and Behavioral Sciences

To answer these questions we viewed the data from three perspectives. First, we used the full sample of those students with expressed intentions of transfer (n=3,318). These students have been attending college from 1 to 68 semesters[3]. Secondly, we reduced the sample to those students who have taken courses ONLY for the last 10 semesters (or innings; n=2,513). Finally, for reasons of comparison, we analyzed a pure sample of first time students who have not attended other postsecondary training (n=1,741). Finding very little differences between the groups, we used the full sample of transfer aspiring students throughout the analyses, thus providing us with the maximum variance.

We calculated the average number of semester enrollments for each of the groups on the diamond (on deck, first base, second base, etc.) subsequently comparing the sample by gender, ethnicity, age, and native language.

To better understand student progress, we then changed our perspective from "bases" to IGETC modules. We analyzed the number and proportion of various types of students successfully completing each type of module. This analysis allowed us to not only to rank the modules with respect to level of difficulty, but also to compare module completion by student group.

Finally, we focused on the mathematics and English modules. We chose to isolate and scrutinize these two specific modules because they frequently act as "gatekeepers" and have been shown to have a significant relationship with other measures of academic success (Secada, 1992), especially for community college students for whom English is not native (Logan, Geltner, & Young, 1998). Moreover, mathematics and English generally form the backbone of general education requirements. A search of the general education requirements for the flagship

[3] All students in the sample were in classes during the data collection semester, Spring 2001. Students attending very few (1, 2, or 3) semesters have likely stopped out.

campuses of all 50 states revealed that each included at least one course in English and Mathematics.

Results

See Table 1 for an indication of progress in the "transfer game" diamond for our three samples (full, students attending 10 semesters of less, and students who have not attended any other postsecondary institution). Note that our attempts to isolate the samples resulted in almost identical findings with respect to proportions of students making progress around the "diamond." Note also that regardless of the method of extraction, the largest number of students remain "on the deck" indicating that despite their declaration of transfer as their goal, only about half of the students have successfully passed **any** of the IGETC modules of courses. About a quarter of the students advanced to "first base." Only about a sixth of the students completed courses that advanced them to "second base." A very small fraction of the students, about a twentieth, reached "third base." Only between three and four percent have become IGETC Certified for transfer, that is, they have completed all 6 IGETC modules. Interestingly, although our inquiry describes transfer readiness and not actual transfer; the proportion of actual transfers in this district (when not restricting the population) is also between 3 and 4 percent.

Insert Table 1 About Here

In Table 2 we provide descriptive statistics regarding the number of semesters (or innings) since taking the first community college course for each group of students on the diamond[4] It is important to remember that a semester may include summer or on some campuses,

[4] Eight of the nine campuses have added a winter intersession since 2001 that takes place during the month of January. There are limited offerings during the intersession and only 1214 (25.9%) of students have ever taken a course during this time. However, in our analyses, if a student enrolled in winter intersession, it was counted as a semester

a winter intersession. Scoring students have been enrolled on an average of 9 ½ semesters. To interpret this table it is important to note that this is the number of semesters for students at a particular point. It does not indicate the number of semesters of time it has taken students who ultimately scored.

Insert Table 2 About Here

Table 3 provides a comparison by gender, ethnicity, age, and native English language as well as results of chi-square analyses. Although all of the bivariate relationships are statistically significant, few are truly large relationships. However there are some important differences in these findings for the several ethnic categories. Asian students were almost twice as likely as other groups to advance to "second base." It is interesting to note that the group with the highest percentage remaining on the deck are African Americans but while the lowest is Asians, they tended not to score as frequently as Caucasians or Hispanics. This somewhat counterintuitive finding may indicate that different ethnic groups use the community college for different purposes.

Insert Table 3 About Here

In Table 4 we provide a look at the completion of specific modules broken down by ethnicity, gender, age, and native language considerations. In the full sample, it is evident that students were more likely to complete the History and American Ideals module and the Social and Behavioral Science Module. The language requirement module was the least likely to be

completed (5.9%). While gender differences were very modest, females were slightly more apt to complete the English requirement. Interestingly, there is no gender difference in the completion of the math module. In science, women actually completed the module in slightly higher numbers. These somewhat surprising gender findings, however, may be due to a relatively large nursing program at several of the campuses that attract large numbers of women and require math and science.

Analysis by ethnicity reveals that Asian students were about twice as likely to finish the mathematics module than the other groups. African American students were the least likely to finish the Arts and Humanities and the Physical and Biological Sciences modules. Further, only 2.8% of the African American students in the sample completed the language requirement module.

Students less than 30 years of age, were more likely to complete the Mathematics and the Arts and Humanities modules than their older counterparts. Students for whom English was not native were more likely to complete the Mathematics module and slightly more likely to finish the Physical and Biological Sciences modules.

Insert Table 4 About Here

Tables 5 and 6 provide the "academic batting averages" for English and Math respectively. These tables divide mathematics and English courses into four levels as follows:

- Level 0
  - Remedial: There exist no pre-requisites to enter the course and the course is designed to teach the necessary skills to be successful in basic level courses and beyond.
- Level 1

- Basic: There may be a pre-requisite to join the course and the course is designed at a basic skills level aiding the student to master the basic skills needed to be successful in the advanced level courses

- Level 2
  - Intermediate: There exists a pre-requisite to enroll in the course and the course is beyond the basic understanding of the core concepts. Usually the course itself is indicated with the title of intermediate. However, the course does not provide transfer credit to either the UC or CSU systems so is not at the advanced transfer level.

- Level 3
  - Advanced/Transfer: There exists a pre-requisite to enroll in this class and the class is designed to teach concepts at the advanced level. Because of their nature, classes at this level are deemed transferable to the UC and CSU system.

It must be noted that the numbers of students taking each level of course may not be representative of the proportions in the district. Our stratified random method of sampling predominantly English courses at several levels oversampled students in transfer level English. This was necessary due to the objective of the project to study transfer. We wanted to include sufficient students who were more likely to transfer in the time span provided for the project. However, the numbers serve as a guide for the size of the sample at each level.

In English, students are typically taking more than one course per level. It is notable that the success rates (proportion of the courses passed with a grade of A, B, C, or "pass") decline with each increasing level. It is also of interest that the proportion of students progressing to the next level also declines with each increasing level.

The picture in mathematics appears slightly bleaker. Note that lower proportions of students are passing at least one course in the specified levels. The success and progression ratios are much lower than those in English. Like in English, the progression ratios decline with level.

Insert Tables 5 and 6 About Here

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Conclusions and Policy Implications

Agreeing with Mundhenk (2000) that the typical measures of student success are insufficient and inaccurate, our unique approach to the conceptualization of transfer readiness provides a different perspective and conclusions to student progress.

Even a cursory look at our findings with respect to "advancing bases" indicates that when including all community college students who aspire to transfer, few make actual progress that will assist them to achieve the goal. Even when restricting the sample by time (10 innings) or definition (no previous postsecondary experience), approximately half of the sample did not complete any of the required transfer modules. It is obvious that if student goals are transfer oriented, their actions may not be leading in the right direction. There are many reasons why students are not progressing on the diamond. We note that many students enter the community college at less than the college level of English and mathematics. Thus, it takes much time and concerted effort to hierarchically take courses until the transfer level course is successfully completed. In an earlier study we found that Asians enroll in their first community college math course at the transfer (rather than the remedial) level at a much higher rate than do other ethnic groups who are more likely to enroll first in remedial courses. This is probably related to the present study's results showing the success of Asian students in completing transfer math courses (Maxwell, et. al., 2003). We also note (see Tables 5 and 6) that students are not particularly successful at the remedial, basic, and intermediate levels. While more than half of all students taking less than transfer level English progress to the next level, many fewer are able to progress in mathematics. For example, the progress level from intermediate to transfer level mathematics was only 37.1%. Thus progress is frequently impeded and blocked when students cannot successfully master lower level courses.

It is noteworthy that students who become transfer ready (score) typically did so in approximately 9 ½ semesters. These findings provide strong evidence that community colleges are not really "two-year" institutions, but rather require successful students to persevere much longer. Also of note is that the number of semesters is very similar for each of the groups on the other bases.

Our analyses by gender, ethnicity, age and native language revealed statistically significant differences. We acknowledge, however, that while statistically significant, the differences in some cases were not particularly large. In this district that is "minority majority" (the majority of students are of color), we provided evidence that different groups progressed at different rates. It is obvious that African American students did not score as often as did Hispanic students. And, Hispanic students were more likely to score than either Caucasians or Asians. The interpretation must be done with care because it may be that some groups may elect to transfer prior to completion of all IGETC modules. Thus, for example, it may be that Asian students utilize the community college more briefly than do African Americans. However, the fact that the typical reference groups of Caucasians and Asians do not appear to score at higher rates than Hispanic students is intriguing for this predominantly Hispanic district. Further, our findings indicate that the typical lumping of students of color into a homogenous group labeled "minority students" may lead to erroneous conclusions.

We found minimal to no differences between older and younger students or between students based on English as native language. Further, there were virtually no differences on the completion of specific modules including English composition. Again, this finding is notable and of extreme importance in this district where only 62.6% of the student body named English as their first tongue (Los Angeles Community College District, 2002).

Older students had a little less success in the completion of the arts and humanities, and the science modules, and substantially less success with the mathematics module. While it may be that older students had less interest in these areas, all of the students in the sample planned to transfer and thus would be required to take the courses leading to acceptance by a university. It may be that older students were less successful due to discomfort in asking for academic assistance from tutoring centers or other walk-in programs on the campuses. Or, it may also be that due to busy lives, older students find it more difficult to add tutoring or other forms of additional academic assistance to their lives. Older students may have been given less attention, even though half of the student body at the LACCD is 25 years or older. It is often assumed, but never tested, that older students are totally self-sufficient, do not require special programs or assistance, and are not interested in extracurricular activities. Yet, as the ranks of older students continue to swell, it is evident that their specific needs are worthy of attention. While many policymakers rely on day care as the sole answer to involvement of nontraditional students, they ignore the fact that older students likely have families that have outgrown the day care environment. These students may be more likely to be burdened with the needs of school aged children, teenaged children, and aging parents. Programs to assist older students should consider the specific "pull factors" that play prominent in these students' lives.

Additional suggestions

Unlike their university counterparts, community college students typically lack the levels of cultural capital that will assist them in understanding the college environment. For this reason, many do not understand the relationship between various levels of courses. For example, students enrolled in remedial (level 0) English may not understand that they are 3 levels removed from a course that will provide transfer credit. Too often students believe that the community

colleges are literally "two year" institutions and that after two years regardless of what courses they have taken or the intensity of course enrollment, they will be able to transfer to the university of their choice. For most community college students, counseling is key to obtaining the college knowledge that will lead them through the community colleges. Unfortunately, counseling is a rare commodity. Interviews at the campuses reveal that the student to counselor ratio is approximately 1000:1. Furthermore, recent state level budget cuts have been especially cruel to the community college system and are threatening to increase the ratio even more. If policy makers truly want to increase student access to higher education at the baccalaureate level, increased attention to the number and quality of counseling services at community colleges is necessary.

The apparent gap in success between African American and other students points to the need for programs designed to help all students succeed. It may be that African Americans in the district that is heavily Latino may feel less welcome or invited to special programs. For example, many of the campuses operate strong and successful Puente Programs that are open to students of all races, but focus specifically on the needs of Latino students. Perhaps a program modeled after the successful Puente should be designed with the needs of African American students in mind.

Conclusions

We acknowledge that this analysis is unusual. At the same time, we assert that the introduction of the metaphor of the game of baseball can have significant effects on the understanding of student progress toward their goals of transfer-readiness. We see this analogy as the first step in a series of works that will identify the factors that predict progress along the

bases, completion of specific "bases," and will identify the barriers in the infield. Further, we see the metaphor as being highly useful in the design of policy to assist students to score.

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Table 1. Numbers and Proportions of Students who have Advanced Bases

	Full sample	10 Innings	Select Group
On Deck	1551 (46.7%)	1336 (53.2%)	762 (50.0%)
Single	816 (24.6%)	569 (22.6%)	364 (23.9%)
Double	610 (18.4%)	396 (15.8%)	258 (16.9%)
Triple	219 (6.6%)	137 (5.5%)	87 (5.7%)
Score	122 (3.7%)	75 (3.0%)	53 (3.5%)
Total	3318 (100%)	2513 (100%)	1741 (100%)

Table 2 Average Number of semesters (Innings) for students on the Diamond

	Average (standard deviation) Number of Semesters (Innings)	Median	Range
On Deck	6.50 (4.06)	6.00	1-43
Single	9.40 (5.13)	8.00	1-30*
Double	10.0 (4.31)	9.00	3-37
Triple	10.1 (4.38)	9.00	4-34
Score (Transfer Ready)	10.9 (4.42)	9.50	5-25

*One person has been enrolled in the community college for 68 semesters as was excluded from the range due to the extreme score

Table 3. Progression on the Diamond by Gender, Ethnicity, Age, and English Language

	All Females	All Males	African American	Caucasians	Asians	Hispanic	Below age 30	Above Age 30	English Native	Non-English Native
On Deck	898 (45.5%)	653 (48.5%)	245 (52.4%)	178 (49.6%)	172 (43.3%)	740 (44.4%)	1176 (45.6%)	375 (50.7%)	666 (48.1%)	781 (44.6%)
Single	484 (24.5%)	332 (24.7%)	111 (23.7%)	81 (22.6%)	65 (16.4%)	467 (28.0%)	616 (23.9%)	200 (27.1%)	360 (26.0%)	421 (24.0%)
Double	359 (18.2%)	251 (18.6%)	72 (15.4%)	65 (18.1%)	120 (30.2%)	276 (16.6%)	515 (20.0%)	95 (12.9%)	225 (16.2%)	360 (20.6%)
Triple	158 (8.0%)	61 (4.5%)	32 (6.8%)	19 (5.3%)	27 (6.8%)	113 (6.8%)	171 (6.6%)	48 (6.5%)	88 (6.4%)	125 (7.1%)
Score	73 (3.7%)	49 (3.6%)	8 (1.7%)	16 (4.5%)	13 (3.3%)	71 (4.3%)	101 (3.9%)	21 (2.8%)	46 (3.3%)	64 (3.7%)
Total	1972 (100%)	1346 (100%)	468 (100%)	359 (100%)	397 (100%)	1667 (100%)	2579 (100%)	739 (100%)	1385 (100%)	1751 (100%)
Results of Chi-Square Analysis	Bases by gender χ^2=13.601; df=3, p<.01		Bases by ethnicity: χ^2=55.315; df=9; p<.0001				Bases by age: χ^2=18.136; df=3, p <.001		Bases by English as Native Language: χ^2 =8.171; df=3; p<.05	

Table 4. IGETC Module Completion by Various Groups

	Full sample	Males	Females	African Americans	Asians	Whites	Hispanic	30 & Over	Under 30	English as Native Language	English Not Native Language
English Composition (Area 1)	543 (16.4%)	184 (13.7%)	359 (18.2%)	74 (15.8%)	55 (13.9%)	59 (16.4%)	281 (16.9%)	112 (15.2%)	431 (16.7%)	235 (17.0%)	280 (16.0%)
Math Concepts (Area2)	949 (28.6%)	378 (28.1%)	571 (29.0%)	99 (21.2%)	188 (47.4%)	98 (27.3%)	441 (26.5%)	156 (21.1%)	793 (30.7%)	335 (24.2%)	567 (32.4%)
Arts & Humanities (Area 3)	763 (23.0%)	309 (23.0%)	454 (23.0%)	83 (17.7%)	90 (22.7%)	99 (27.6%)	367 (22.0%)	146 (19.8%)	617 (23.9%)	327 (23.6%)	400 (22.8%)
Social & Behav. Sciences (area 4)	1624 (48.9%)	585 (43.5%)	1039 (52.7%)	211 (45.1%)	216 (54.4%)	180 (50.1%)	816 (49.0%)	342 (46.3%)	1282 (49.7%)	690 (49.8%)	856 (48.9%)
Physical & Biological Sciences (Area 5)	655 (19.7%)	249 (18.5%)	406 (20.6%)	62 (13.2%)	101 (25.4%)	81 (22.6%)	327 (19.6%)	122 (16.5%)	533 (20.7%)	262 (18.9%)	364 (20.8%)
Language Requirement (Area 6)	195 (5.9%)	68 (5.1%)	127 (6.4%)	13 (2.8%)	31 (7.8%)	22 (6.1%)	111 (6.7%)	40 (5.4%)	155 (6.0%)	80 (5.8%)	104 (5.9%)
History & Amer. Ideals (area 7)	1507 (45.4%)	595 (44.2%)	912 (46.2%)	196 (41.9%)	185 (46.6%)	143 (39.8%)	827 (49.6%)	312 (42.2%)	1195 (46.3%)	615 (44.4%)	822 (46.9%)
Total	3318	1346	1972	468	397	359	1667	739	2579	1385	1751

Table 5. Academic Batting Averages -- English

	Number of students attempting level	Number of students Passing at least one course at level	Average number of classes in level (s. d.)	Success ratio (s. d.) in level	Progressed at least one level or higher (%)
Level 0 English (Remedial)	821	692 (84.3%)	2.42 (2.25)	.78 (.37)	586 (71.4%)
Level 1 English (Basic)	2782	2419 (87.0%)	2.30 (1.97)	.75 (.36)	1647 (59.2%)
Level 2 English (Intermediate)	2432	1957 (80.5%)	1.29 (.63)	.73 (.40)	1256 (51.6%)
Level 3 English (Transfer)	2671	2192 (82.1%)	1.88 (1.09)	.70 (.39)	n/a

Table 6. Academic Batting Averages -- Mathematics

	Number of students attempting level	Number of students passing at least one course at level	Average number of classes in level (s.d.)	Success ratio (s.d.) in level	Progressed at least one level or higher (%)
Level 0 Math (Remedial)	1755	1336 (76.1%)	1.72 (1.10)	.66 (.42)	771 (43.9%)
Level 1 Math (Basic)	2195	1578 (71.9%)	1.63 (.97)	.59 (.43)	773 (35.2%)
Level 2 Math (Intermediate)	1581	1147 (72.5%)	1.34 (.69)	.64 (.44)	587 (37.1%)
Level 3 Math (Transfer)	1365	1040 (76.2%)	1.97 (1.45)	.64 (.42)	N/A

Appendix: Intersegmental General Education Transfer Curriculum (IGETC)

The IGETC is a statewide articulation agreement between the California Community Colleges, California State Universities (CSU), and University of California (UC) schools. With seven distinct areas, the IGETC is a complete description of the course requirements to transfer. CSU and UC schools have different requirement for each area. The descriptions of each area and the requirements for CSU are below.

Area 1, English composition, contains three divisions (A,B, and C). Three courses are required; one course in each division.
Courses include:
English
Speech

Area 2, Mathematical Concepts and Quantitative Reasoning, requires the completion of one course.
Courses include:
Math
Statistics
General Engineering

Area 3, Arts and Humanities, contains two divisions (A and B). Three courses are required with at least one course in division A and one course in division B.
Courses include:
Art
Music
Theater
Cinema
African American Studies
Chicano Studies
Physical Education
Theater
English
Foreign Languages
Philosophy
Asian American Studies
Human Development

Area 4, Social and Behavioral Sciences, requires three courses.
Courses include:
History
Sociology
Psychology
Anthropology
Geography
African-America Studies

Child Development
Economics

Area 5, Physical and Biological Sciences, contains two divisions (A and B). Two courses are required: one course in division A and one in division B including a laboratory course.
Courses include:
Astronomy
Chemistry
Biology
Geology
Geography
Anatomy
Physics.
Oceanography
Environmental Science
Anatomy
Physiology

Area 6, Language Other than English, is ONLY required by the University of California.
Courses include:
Spanish
French
Hebrew
Japanese
German
Italian
Chinese

Area 7, U.S. History, Constitution, and American Ideals, is not specifically part of the IGETC but may be completed prior to transfer.
Courses include:
History
African-American
Chicano Studies
Political Science

U.S. Department of Education
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